## SEISMIC REQUIREMENTS FOR STAGE CONSTRUCTION

For projects where stage construction requires that partially constructed bridges must carry traffic, or go over traffic, or both; the following guidelines should be applied in evaluating the seismic capacity.

Evaluation of the partially constructed bridge should consider the following:

1. The proximity of the bridge to an active fault.
2. Estimated damage to the bridge from probable seismic motions.
3. Stability of the bridge from probable seismic motions.

For partially constructed bridges, the following probable peak bedrock acceleration (A) may be assumed:

| Distance to active fault | Probable 'A' |
|---|---|
| 0 to 1 mile | 0.4 g |
| 1 to 2 miles | 0.3 g |
| 2 to 12 miles | 0.2 g |
| over 12 miles | 0.1 g |

The design factor 'Z' (BDS Fig. 3.21.1.2) may be increased by 50% for the temporary condition subjected to the probable seismic motions. This increase may not be applied to shear keys or hinge restrainer cables.

Stability of the bridge may be assumed to be satisfactory when one or more of the following conditions are present:

- On bridges without hinges, the abutments are able to carry all loads from the probable event without appreciable distress.
- The partially constructed bridge is composed of pinned multi-column bents and/or fixed single column bents.
- Pinned single columns are supported by falsework.

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## COMMENTARY

Structures within 2 miles of an active fault can receive peak bedrock accelerations of 0.25g or more from earthquakes with magnitudes as small as 5, thus it must be shown that collapse of the partially constructed bridge will not occur from the assumed probable accelerations.

The policy of accepting seismic damage without collapse still applies, except that more movement and damage will be permitted to occur during the temporary stage when subjected to motions at or above the level of the assumed probable accelerations.

These guidelines apply to normal freeway bridges and stream crossings. Tall bridges, bridges with unusual geometric configurations, bridges on high skews and unusual bridges should be evaluated by the designer on an individual basis.

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